

REMARKS/ARGUMENTS

The present application includes claims 1-3 and 5-20. By this response, claim 1 has been amended. The Applicants respectfully submit that no new matter has been added by this amendment.

Claims 1-3, 5-20 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claims 1-3, 5-20 were rejected under 35 U.S.C. §103(a) as being anticipated by Strobel et al., U.S. Pat. No. 7,050,844 B2 ("Strobel") in view of Filler et al., U.S. Published Application No. 2001/0051881 ("Filler").

The Applicants first turn to page 2 of the Office Action. Under paragraph 2, third sentence, the Office Action states "Applicant argument that the references fail to show certain features of the applicant's invention, it is noted that the features upon which applicant relies (automatically displayed in an image by image manner at an acceptable rate of speed.) are not recited in the rejected claims." Applicant submits that the above quoted feature was in the amended claim 1 of Applicants' Response mailed 12/14/2007 and thus caused the Applicant confusion.

In a telephone conversation on March 18, 2007 between Applicants' representative and Examiner, the Examiner cleared up the discrepancy and stated that the quoted passage should have read "Applicant argument that the references fail to show certain features of the applicant's invention, it is noted that the features upon which applicant relies (automatically displayed in an image by image manner at an acceptable rate of speed.) are not recited in the ~~rejected claims~~ specification"

Previously Amended Claims – Response Mailed 12/14/2007

The Applicants now turn to the previously amended claims 1, 3, 10, 14 and 18 in the Applicant's Response mailed 12/14/2007. The present Office Action appears not to have addressed the previously amended claims 1, 3, 10, 14 and 18 in the Applicant's Response mailed 12/14/2007 specifically with respect to the 35 U.S.C. § 103. In the 12/14/2007 Response, in order to more clearly describe the Applicants' technology, Applicants deleted the word "scrolling" and substituted "in an image by image manner." This amendment was made to distinguish between scrolling by the use of a mouse on a computer screen and the Applicants' technology which required a sequential or "image by image" presentation of images to create an animation.

Dependent claims 3 and 14 were amended to conform to claims from which they depended.

Amended Claims

In the present response, in order to expedite allowance, the Applicants' have deleted the feature of "at an acceptable rate of speed" in claim 1.

The Applicants respectfully submit that no new matter has been added by these amendments.

Claim Rejections – 35 U.S.C. § 112

Claims 1-3, 5-20 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action states that "[c]laims 1 and 10 teach automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed. The closest description the examiner finds '[t]his algorithm may use various parameters such as the current direction of travel through

the image sequence, the desired scrolling speed and scrolling resolution.” Applicant respectfully traverses this rejection.

In the first instance, the quoted passage “automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed” only applies to previously amended claim 1 and not to claim 10 as the Office Action alleges. Applicant will address this rejection as applying only to claim 1. Because the Office Action rejects independent claim 10 and 18 as well as all dependent claims depending from independent claims 1, 10 and 18, Applicant will also address the previously amended independent claims 10 and 18 under 35 U.S.C. § 112, first paragraph.

Support for the embodiment of the subject matter “automatically displaying each image in said collected plurality of images in a image by image manner at an acceptable rate of speed” to create an animation may be found in the specification as originally filed. For example, the specification of published application US 2005/0169510 discloses in paragraphs 0008 and 0013

[0008] Methods are contemplated which comprise collecting at least a plurality of 2D fluoroscopic images and continuously scrolling through the plurality of collected images using a display. Methods are also contemplated which comprise projecting the at least one position and orientation of the at least one instrument into the plurality of collected images in sequence.

[0013] Other embodiments of the present invention comprise collecting the series of 2D images (a series of 2D fluoroscopic images for example) using an imaging device that moves or is moveable, where this device is a C-arm. For example, contemplated methods include continually scrolling through the series of images in a display, wherein at least one position and orientation of at least one instrument are projected into at least one image of the series of images. It is further contemplated that at least the current image may be incremented, wherein incrementing the current image comprises selecting a different collected image to be the current image based on an algorithm and recomputing at least one of the position and orientation of at least one instrument for the new current image.

Another example of support for the subject matter may be found in paragraphs 0045-47 of the original specification:

[0045] As provided previously, at least one embodiment of the present invention improves the methods of transferring instrument position and/or orientation information to a user, making such information easier to use and understand. It should be appreciated that making such information easier to use and understand may improve efficiency and/or ease of use of surgical workflow and may increase product quality perception. At least one or more embodiments uses natural human ability to perceive 3D information from animated 2D data to transfer the position and/or orientation of a surgical instrument to a user.

[0046] Perceiving a 3D volume occurs naturally for humans when motion is introduced to a static set of data. One or more embodiments of the present invention collects one or more (i.e., a series) of images (2D fluoroscopic images for example) using a movable collection device (a C-arm for example) adapted to be rotated about a patient's anatomy of interest. It should be appreciated that, in at least one embodiment, this collected series of images or data set is appropriate for animation.

[0047] One embodiment provides user feedback, where the data set is continuously scrolled in a window or display. Further an instrument's position and/or orientation may be projected onto or into one or more images. In one embodiment, the instrument position and/or orientations projected into each image in sequence. Such scrolling of the data set, including the position and/or orientation of their instrument, enables the user to understand the instrument position and/or orientation information in 3D, thus taking advantage of the user's natural abilities to perceive 3D volume, thus eliminating learning new skills to understand the data. In addition, at least one embodiment does not require direct user interaction to optimize the display as required by one or more known methods of the computer assisted surgical procedures.

Further support for the subject matter may also be found in paragraphs 0052 & 0056 of the original specification of published application as follows:

[0052] In one embodiment, the instrument position and/or orientations is projected into each image in sequence. Such scrolling of the data set, including the position and/or orientation of the instrument, enables the user to understand the instrument position and/or orientation information in 3D, thus taking advantage of the user's natural abilities to perceive 3D information, thus eliminating learning new skills to understand the data. In addition, at least one embodiment does not require direct user interaction to optimize the display as required by one or more known methods of the computer assisted surgical procedures.

[0056] Method 300 further comprises Step 352, projecting the instrument position and/or orientation into the current image. In one or more embodiments, it is contemplated that such instrument position and/or orientation may be projected

into more than one image in a series of images. Step 350 comprises displaying the current image in at least one embodiment. In at least one embodiment, method 300 further comprises Step 356 and Step 358 which comprise delaying and incrementing a current image, respectively. In at least one embodiment, incrementing a current image comprises using an algorithm to select a different collected image to become the current image. This algorithm may use various parameters such as the current direction of travel through the image sequence, the desired scrolling speed and scrolling resolution, and whether the current image is at one of the ends of the image sequence to determine the next current image. After the current image is incremented, the instrument position and/or orientation may be recomputed within the new current image as illustrated in step 350.

From the above cited examples, the Applicants, at the time the invention was filed, had possession of the claimed features. The Applicants disclosed that the images are automatically displayed (In addition, at least one embodiment does not require direct user interaction to optimize the display as required by one or more known methods of the computer assisted surgical procedures. Para. 0052 of published application US 2005/0169510.) in an image by image manner (Para. 0008 and 00052 of published application US 2005/0169510) to create animation. (Para. 0045 and 0046 of published application US 2005/0169510).

Therefore, for at least these reasons, Applicants respectfully submit that the cited subject matter in the Office Action is supported in the original specification and is not new matter. Applicants respectfully submit that claim 1 is in condition for allowance.

Although the Office Action stated that Claim 10 also included the feature “automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed,” Applicants respectfully disagree. Previously amended claim 10 claimed the feature of “automatically repeating said selecting, computing, projecting, and displaying steps to create an animation using a sequential image by image presentation through said series of 2D images.” At least, the above cited paragraphs from the original specification disclose that the Applicants, at the time the application was filed, had possession of the claimed

features. See, for example, at least, paragraphs 0008, 0047 and 0052 of published application US 2005/0169510 quoted above.

Even though the Office Action appears not address independent claim 18, the Office Action rejected Claim 18 on the basis that the feature “automatically displaying each image in said collected plurality of images in a image by image manner at an acceptable rate of speed” found in claim 1. The Applicants respectfully disagree that claim 18 contained this explicit feature. Previously amended claim 18 claimed the feature of “automatically and continuously presenting an image by image display.” At least the above cited paragraphs from the original specification disclose that the applicants, at the time the application was filed, had possession of the claimed features. See, for example, at least Paragraphs 0008, 0047 and 0052 of published application US 2005/0169510 quoted above.

Therefore, for at least these reasons, Applicants respectfully submit that the cited subject matter in the Office Action is supported in the original specification and is not new matter. Applicants respectfully submit that independent claim 1 and dependent claims 2-3, 5-9 which ultimately depend from claim1; independent claim 10 and dependent claims 11-17 which ultimately depend from claim10; and independent claim 18 and dependent claims 19-20 which ultimately depend from claim18 are in condition for allowance.

Claim Rejections – 35 U.S.C. § 103

The Applicants now turn to the rejection of claims 1-3 and 5-20 under 35 U.S.C. 103(a) as being unpatentable over Strobel et al. (US 7050844) in view of Filler (US Published Application 2001/0051881).

The Office Action states that “[w]hile Strobel meets a number of limitations of the claimed invention, as pointed out more fully above, Strobel does not specifically teach creating

an animation by scrolling through the images. (Office Action, page 5). (See also, Office Action, page 4, mailed 9/18/2007.)

Further, the Office Action states “[s]pecifically, Filler et al. teaches the use of a [] live medical record in figure 15 a composite screen 1500 that includes a navigational view that contains a navigation links 110 provide as a scroll bar 1506, wherein by selections through clicking or even just by passing the cursor over a particular selectable link can make regions light up or can drive a floating box, trigger animation, cause new windows to open showing additional data, or any other dynamic or static HTML action or by using an automated software.” (Office Action, page 5).

Further, the Office Action states “[i]t would have been obvious to one off ordinary skill in the art to use animation by scrolling through the images in order [to] help [] make user interfaces more usable in Strobel presentation display in order the user can rely on an explicit overview of the whole system thus understanding and providing better visualization skills and positional information.” (Office Action, page 5).

The present Office Action does not appear to address the amended claims presented in Applicants’ response mailed 12/12/2007 in regard to 35 U.S.C. § 103 with the exception of adding “or by using an automated software” to the previous Office Action mailed 9/18/2007. For instance, the present Office Action states “Strobel does not specifically teach creating an animation by scrolling through the images.” The previously amended claims in Response mailed 12/14/2007 deleted “scrolling” to differentiate scrolling by use of a mouse found in Filler and to more clearly point out that the Applicants’ technology is presenting image in an image by image manner or sequentially to create an animation.

The present Office Action has added the words “or by using an automated software thus.” (Office Action, page 5). In regard to “by using an automated software” Filler states that in regard to image composition,

In FIG. 11, the next step in the image composition process is illustrated. Here, by means of the original layout or composition software mentioned above in the discussion of FIG. 9 or by using a different software package, HTML image maps 1102 are placed on the image, preferably as overlays. The composing user such as the reading physician or technician uses the composition software or an automated software programming method, which perhaps might be keyed to focus on certain colors, shapes, or other distinguishing marks or images on either the raw image 920 or the edited image 1020 from FIG. 10.

Filler, Para. 0059, page 6.

“The automated software programming method” as disclosed in Filler is related to focusing “on certain colors, shapes, or other distinguishing marks or images on either the raw image 920 or the edited image 1020 from FIG. 10.” The automatic computing method disclosed in Filler for composing images does not teach or disclose a method for automatically display each image in said collected plurality of images in an image by image manner to create an animation as claimed in claim 1 of the instant application. Nor does the automatic computing method disclosed in Filler for composing images teach or disclose a method for automatically repeating said selecting, computing, projecting, and displaying steps to create an animation using a sequential image by image presentation through said series of 2D images as claimed in claim 10 of the instant application.

Independent claim 1 was amended to claim “automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed to create an animation.” Filler does not teach that the images are automatically displayed in an image by image manner or sequentially. Rather, Filler teaches that the images are loaded, optionally as JPEG files into an HTML jacket which renders them accessible and manipulable

through a web browser and by the use of HTML and available to an individual who is viewing the pages through their web browser. (Filler, page 6).

The Office Action agrees that Filler teaches that the images are loaded by the use of HTML and available to an individual who is viewing the pages through their web browser but alleges that Filler also teaches that an automated software program might be keyed for use. (Office Action, Page 3). As stated above, the automatic computing method disclosed in Filler for composing images does not teach or disclose a method to automatically display each image in said collected plurality of images in an image by image manner to create an animation as claimed in claim 1 of the instant application.

Further, Filler requires the end user to pass the cursor over a selectable link. (Filler, page 7). Filler does not teach that the plurality of images are automatically displayed in an image by image manner to create an animation. Rather, Filler requires a user to move a cursor over a navigation tool to advance images in a manual manner to, at best, create an animation-like effect. By manually navigating through image by image, or scrolling by the use of a mouse, animation by Filler's method does not teach the creation an acceptable animation process that can be usefully viewed in conjunction with instrument positioning. Further, by requiring manual image by image navigation, Filler does not teach the automatic image by image presentation at an acceptable rate of speed to produce animation. Therefore, Applicants submit that rather than automatically creating and displaying an animation by presenting image by image to create an, Filler merely teaches that a user can manually move through or scroll through the data image by image.

The Office Action appears not to address the previously amended claim 10 from the Applicants' response mailed 12/14/2007. The present Office Action states."[t]he limitation of

claim 10 has been addressed above except for the following “performing instrument tracking on a series of 2D images and repeating said selecting, computing and projecting and displaying steps to create an animation by scrolling through said series of 2D images.” Applicants’ respectfully point out that the amended claim 10 in Applicants’ response mailed 12/14/2007 to which the present Office Action purports to address claims the feature “automatically repeating said selecting, computing, projecting, and displaying steps to create an animation using a sequential image by image presentation through said series of 2D images.” Filler, as explained above, does not teach automatically selecting, computing , projecting and displaying images to create an animation using a sequential image by image display. Rather, as discussed above, Filler merely teaches that a user can manually move through the data image by image.

Also, the Office Action appears not to address the previously amended claim 18 from Applicants’ response mailed 12/14/2007. Independent claim 18 has been amended to create an animation by “automatically and continuously presenting an image by image display.” Filler does not teach creating an animation by automatically and continuously presenting an image by image display. Rather, as discussed above, Filler merely teaches that a user can manually move through the data image by image.

As claims stand amended, Applicants respectfully submit, that Filler does not teach the claimed features of independent claims 1, 10 , and 18. Further, the Applicants respectfully submit that the combination of Strobel and Filler would not make the claimed invention obvious to one of ordinary skill in the art at the time of the invention.

Claims 2-3 & 5-9; 11-17; and 19-20 depend from independent claims 1, 10, and 18, respectively. The Applicants respectfully submit that because claims 1, 10, and 18 should be

allowed for at least the reasons discussed above, claims 2-3, 5-9, 11-17, and 19-20 should also be allowed.

CONCLUSION

In general, the Office Action makes various statements regarding the pending claims and the cited references that are now moot in light of the above. Thus, the Applicants will not address such statements at the present time. However, the Applicants expressly reserve the right to challenge such statements in the future should the need arise (e.g., if such statement should become relevant by appearing in a rejection of any current or future claim).

In view of the above remarks, Applicants respectfully submit that claims 1-3 and 5-20 now pending in the application contain patentably distinct subject matter over all the references of record and are in condition for allowance. Applicants, therefore respectfully request consideration of the pending claims and a finding of their allowability. A notice to this effect is respectfully requested. Please feel free to contact the undersigned should any questions arise with respect to this case that may be addressed by telephone.

The Commissioner is authorized to charge any additional fees or credit overpayment to the Deposit Account of GTC, Account No. 070845.

Respectfully submitted,

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/Dennis P. Hackett/

Dennis P. Hackett
Reg. No. 52,482

McAndrews, Held & Malloy, Ltd.
34th Floor
500 West Madison Street
Chicago, Illinois 60661
Phone (312) 775-8000
Fax (312) 775-8100